M/029/001
M/045/012
M/045/060

WP NATURAL RESOURCE CONSULTING, LLC

NEPA • • WILDLIFE • • VEGETATION • • MINELANDS • • WETLANDS • • PLANNING

October 6, 2005

Division of Oil, Gas and Mining
Minerals Program
P.O. Box 145801
Salt Lake City, Utah 84114-5801
ATTN: Doug Jensen

Dear Mr. Jensen,
I understand you have the regulatory responsibilities for the Poverty Point, Devil's Slide and Skull Valley mines operated by Holcim, Inc. Enclosed are the final reports for the soil and vegetation baseline assessments which I completed over the summer at these mines. Holcim also has a copy of these reports at their Devil's Slide office.

Could you please email me at: wheelermindy@yahoo.com to let me know you received these reports?

Thank you.

Sincerely,

Mindy Wheeler
Principal Ecologist

P.O. BOX 520604 • SALT LAKE CITY, UT 84152
PHONE: (801)699-5459 • FAX: (435)645-9699
EMAIL: WHEELERMINDY@YAHOO.COM

M/029/001

Holcim, Inc
Vegetation and Soil Baseline Assessment

Devil's Slide Mine

Prepared for:
Holcim, Inc
Devil's Slide
6055 E. Croydon Road
Morgan UT 84050

Prepared by:

WP Natural Resource Consulting, LLC
PO Box 520604
SLC, UT 84152
(801) 699-5459

INTRODUCTION

Holcim, Inc is required to submit a new LMO to the State of Utah Division of Oil Gas and Mining (DOGM) to continue mining operations at their Devil's Slide plant. The purpose of this report is to provide a baseline characterization of soils and vegetation according to the requirements set forth by DOGM as listed on Form MR-LMO. This information will assist in the design of a site appropriate and effective reclamation plan.

SITE DESCRIPTION

VEGETATION

The mine property lies on the eastern boundary of Morgan County along Highway 84 just west of Henefer. The area receives 17-20 inches of precipitation annually (79% of which comes in November – June) and slope steepness varies from 20 to 60%. The area is chiefly dominated by sagebrush (*Artemisia tridentata* var. *vaseyana*), which occupies gentler slopes, with mountain shrub communities with species such as big toothed maple (*Acer grandentitatum*) and serviceberry (*Amelanchier utahensis* and *A. alnifolia*), inhabiting protected drainages between the open slopes. The understory includes perennial grasses such as bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass (*Poa secunda*), and muttongrass (*Poa fendleriana*), and perennial forbs such as lupine (*Lupinus sericeus*) and wild onion (*Allium cernuum*). Vegetation cover in the sagebrush community type is 39.4% +/- 9.5 and vegetation cover in the mountain shrub community averages 74.9% with a standard deviation of 11.3%. Vegetation cover jumps to 50.5% for the sagebrush community and 79.2% for the mountain shrub community if non-native annual grasses are included. From an ecological perspective, both vegetation communities in the area generally have good structure and age distribution. However, species diversity is somewhat low reflecting past land uses and conditions such as grazing and drought. Additionally, invasive species (particularly musk thistle) are beginning to invade the native vegetation communities. Figure 1 shows the location of the Devil's Slide mine and plant, and Figures 2 and 3 depict the typical undisturbed state of the vegetation communities surrounding Devil's Slide Mine.

Figure 1.Location of Devil's Slide Cement Plant and Mine

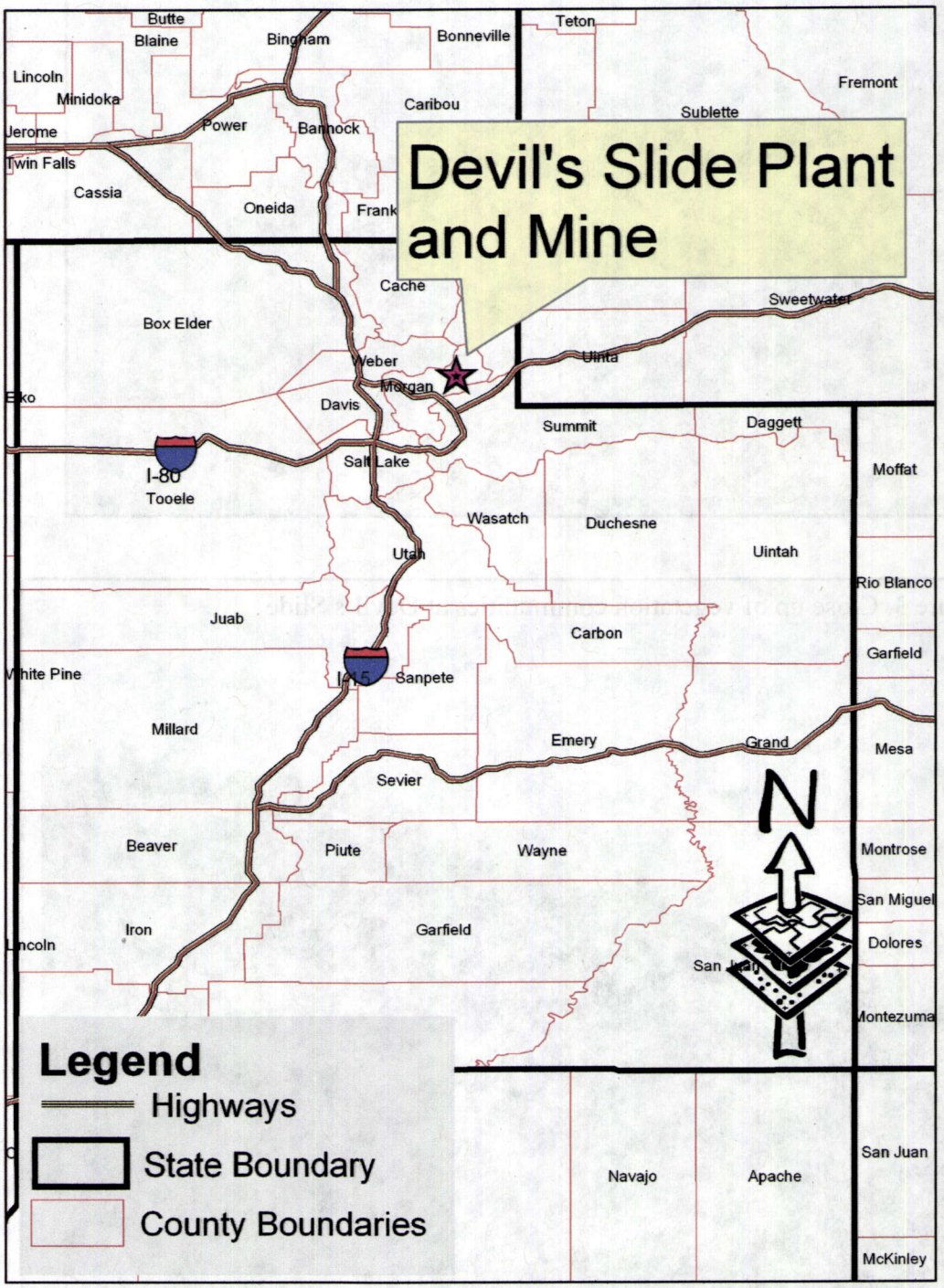


Figure 2. Overview of vegetation communities at Devil's Slide.

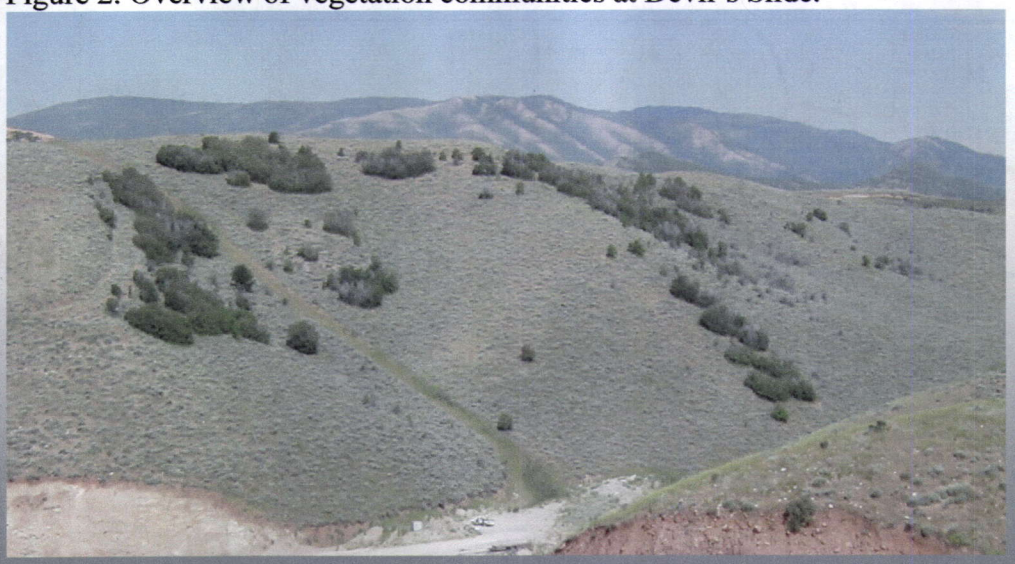
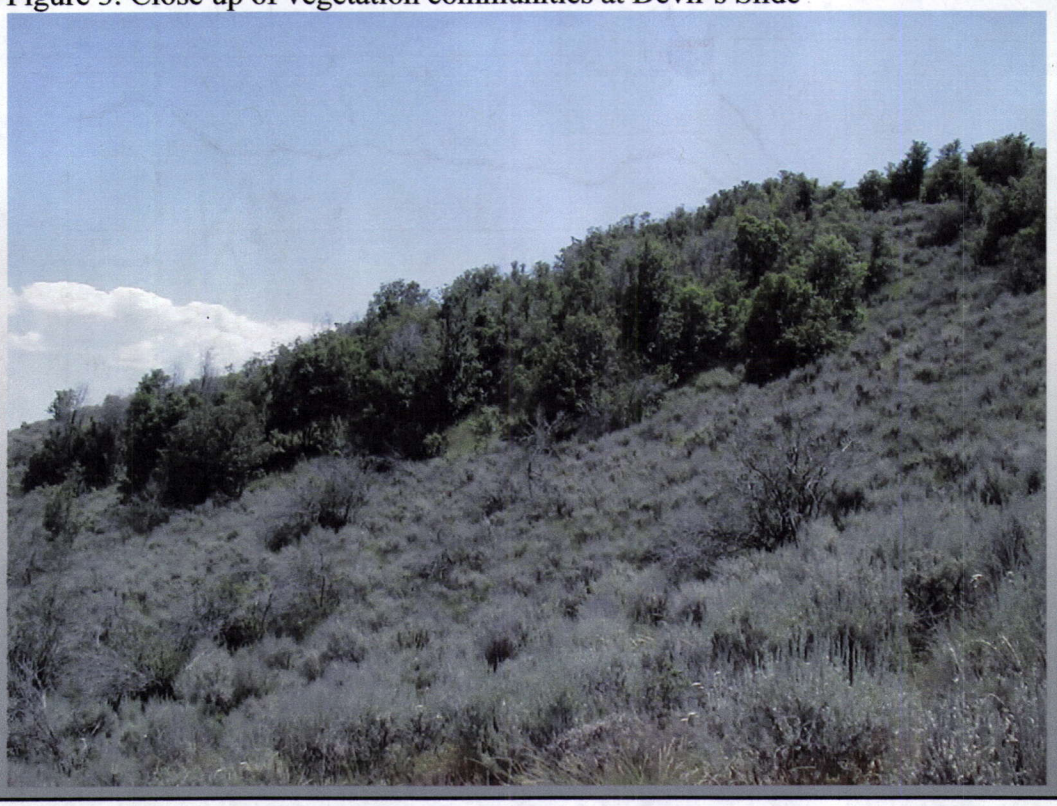


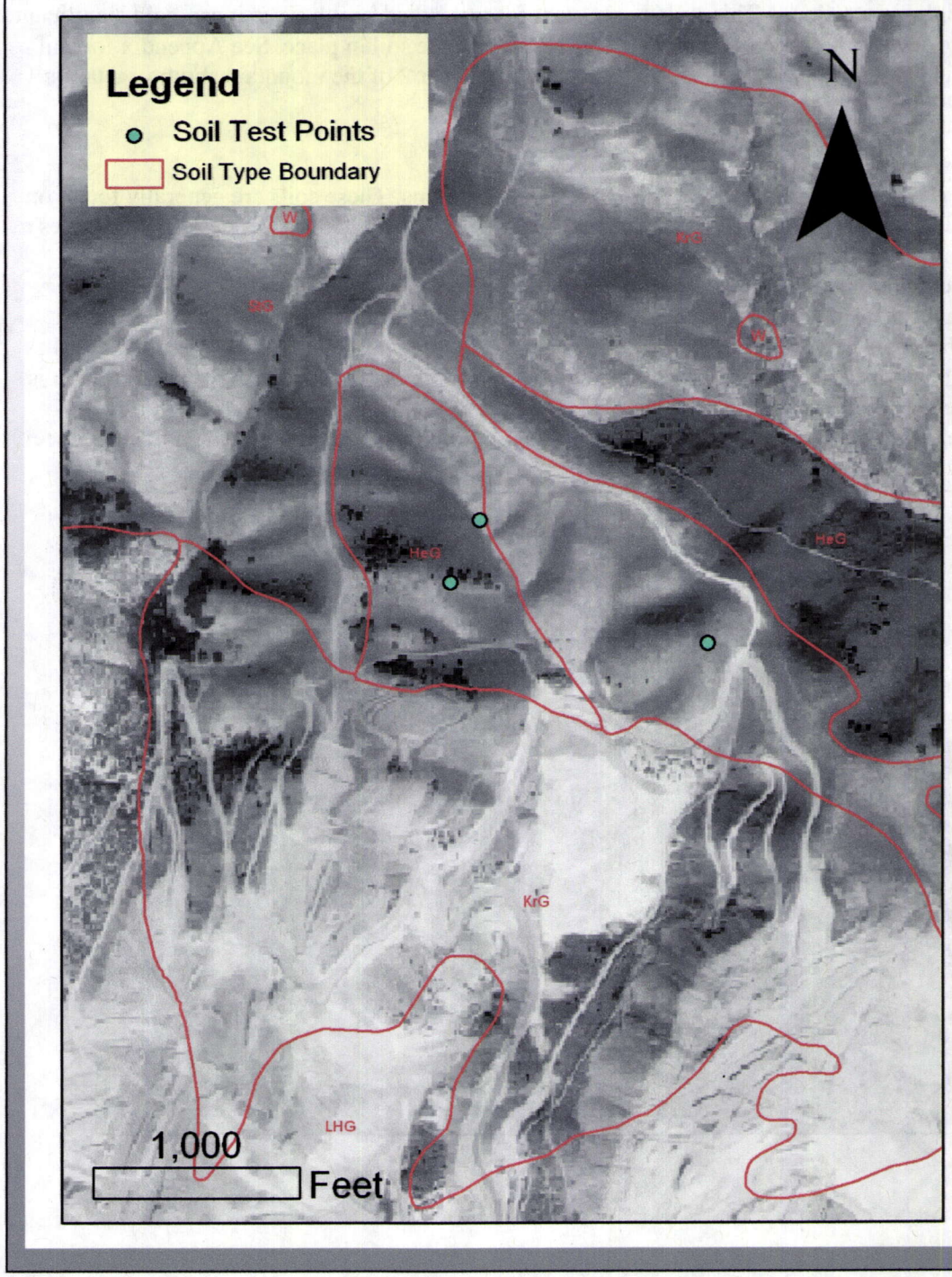
Figure 3. Close up of vegetation communities at Devil's Slide



SOILS

The 1981 soil survey published by the Soil Conservation Service (now the Natural Resource Conservation Service) covers the area of the mine in their Morgan Area soil survey. This soil survey was used in conjunction with soil tests in 3 areas to ascertain the character of the soils in the area. Three soil samples from the area were sent to the USU soils laboratory to determine pH, EC, CEC, %OM, N, P, SAR and K (see Figures 2 for soil type locations and sample locations).

Figure 4. Soil Type Boundaries and Soil Test Points



The following are descriptions of the various soil types in the area:

Henefer loam –(HeG)
This soil is on the north and east facing slopes in the area on 40-60% slopes. It is very deep and well drained, and is formed from sandstone and quartzite. The surface layer is about 16 inches thick and is described as a very dark brown loam. The subsoil is dark brown gravelly silty clay loam or silty clay down to 60 inches deep. Rock fragment percentage increases as soil depth increases. Permeability is slow, available water capacity is moderately high, and erosion hazard is high, mainly due to slope. This soil is important for watershed health since it can hold significant amounts of water and supports dense vegetation to keep the soil in place. See Appendix for soil test results in this soil type (taken from the areas of transect 2 of the mountain shrub vegetation type.

St Mary's-Hoskin (StG)
This soil is a mixture of St. Mary's and Hoskin cobbly loams. These soils are generally found on south and west facing slopes in the area on slopes between 30 and 50% steepness, and occupies a large area within the mine property and north of the property. These soils originated from a weathered conglomerate of quartzite and sandstone. The soil is deep and well drained, with a surface layer of cobbly loam about 10 to 14 inches thick, and a subsoil layer of reddish brown very cobbly loam or very cobbly sandy clay loam 14 to 30 inches deep. Some soil in the area has a deeper layer of very cobbly sandy loam about 30 inches thick, but in some areas this stratum is not present. Therefore the bedrock can lie between 22 to 60 inches in depth. Permeability is moderate, available water capacity is low, and the erosion hazard high, mainly due to slope. See appendix B for soil test results in this soil type as well as the others.

Figure 5. Exposed soil profile in the St. Mary's Hoskin cobbly loams

Kilfoil rock outcrop complex (KrG)
This soil is on south, west and east facing hillsides ranging from 40 to 60% slope. Most of this complex is the Kilfoil loam and the rock outcrop is interspersed within the Kilfoil loam and occurs on ridges and is exposed on ledges and outcroppings of bare rock. The Kilfoil loam was formed in materials weathered from sandstone and shale. The Kilfoil loam has a surface layer about 3 inches deep and the subsoil is a dark clay loam about 18 inches thick, and weathered fractured sandstone is at about 30 inches in depth. The surface layer is mildly alkaline and calcareous, whereas the subsoil is moderately calcareous and can be strongly alkaline. The erosion hazard high, and the water holding capacity is moderate. This soil is/was present under the upper areas of the active mine.

Lithic haploxerolls (LHG)
This is the soil type that was/is under much of the present mine property. Much of this soil type is considered a rock outcrop, but there are pockets of soil development within this type. The Kilfoil loam is within this type as well as the Hoskin cobbly loam. Within the LHG type, a typical surface layer is variable but is a brown stony loam about 6 inches thick with a stony clay loam underlying the surface layer. The bedrock is found between 10 and 20 inches. The soil is strongly calcareous and moderately alkaline, the water holding capacity is very low, and erosion hazard is high.

Agassiz rock outcrop (AaG)
This soil is generally on south and west facing mountainsides of 40-70% slopes. It is found on the south side of Highway 84 under sagebrush plot #10. The soil is shallow (bedrock is between 14 and 19 inches deep), and formed from materials that weathered from limestone. The surface layer is a silt loam about 8 inches, and the underlying layer is 6 inches of a cobbly silt loam. Limestone is found at about 14 inches, thus the water holding capacity is very low, and the erosion hazard high.

Horrock's rock outcrop complex (HvG)- south side of highway under MS
This soil complex is generally found on south and west facing mountainsides of 40-70% slopes. This soil type is on the The soil originated from materials weathered from limestone. The surface layer is a gravelly loam about 15 inches thick. The surface layer becomes more cobbly deeper in the profile. The subsoil is about 22 inches and is a very cobbly clay loam. Weathered shale lies at about 45 inches deep. Water holding capacity is low and erosion hazard is high.

METHODS

Data on vegetation cover and species richness (diversity) was collected on July 8, 2005. To ascertain the range of variability for vegetation cover, ground cover, and species composition, 10 transects of 100 feet in each vegetation type were established in areas determined to be representative of each of the vegetation types in the area (See Figures 6 and 7). Once within a stand of typical vegetation, a pin was spun to randomly determine the azimuth of the transect. Every foot, a point was taken and recorded (plant species, rock, litter, bare ground or gravel). Only aerial cover was determined in this manner, thus total ground cover plus bare ground must be equal to 100%. However, it is also important to consider the density of the understory vegetation stratum (grasses and forbs), particularly in the mountain shrub communities, which will bring the total vegetation cover over 100%. The photos of the mountain shrub community

show the density of the grasses and forbs underneath the large shrubs. Ocular estimates of the understory vegetation ranged from 15 to 50% in the mountain shrub community.

Figure 6. Vegetation transect locations on the north side of Hwy 84

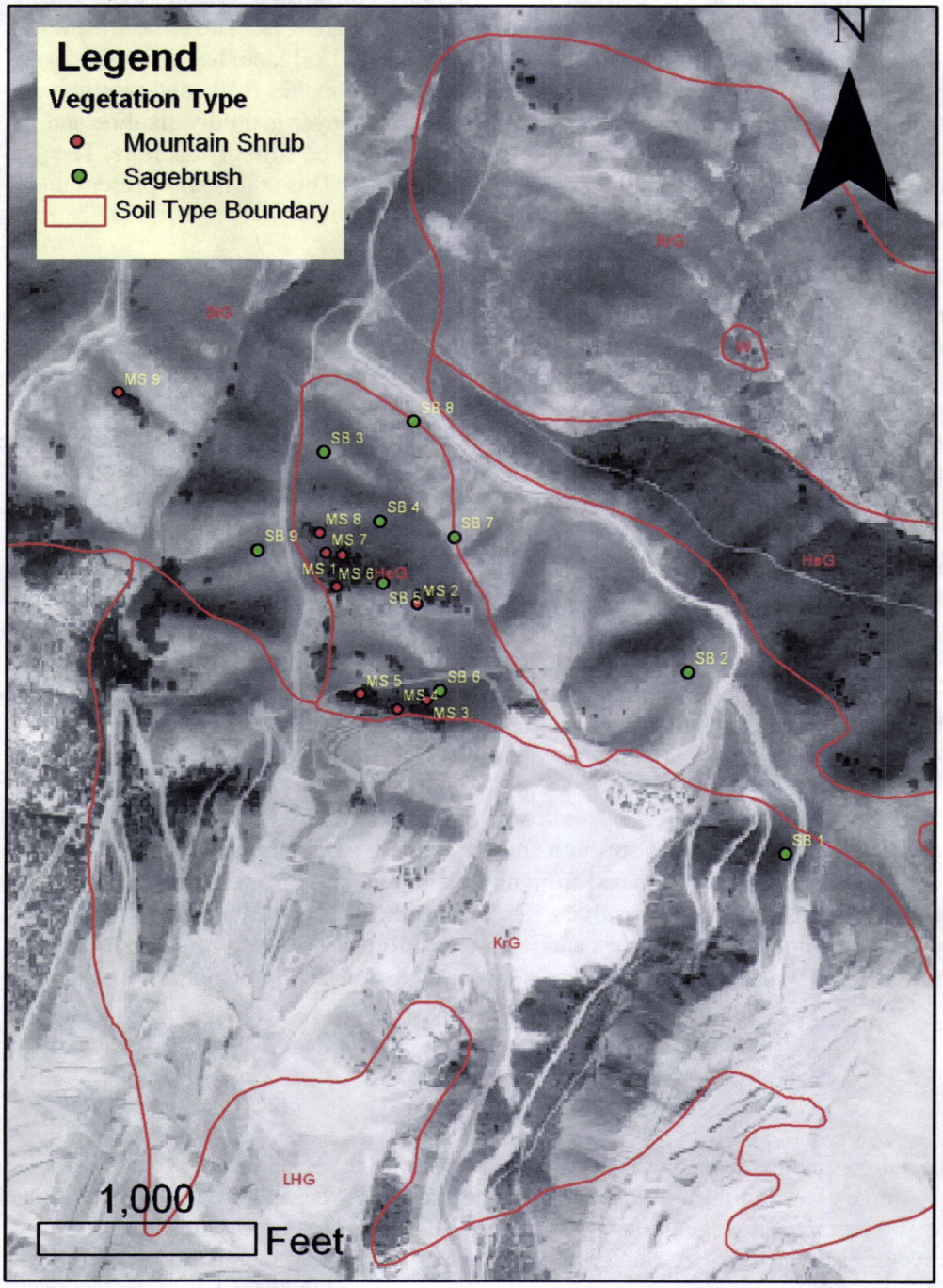
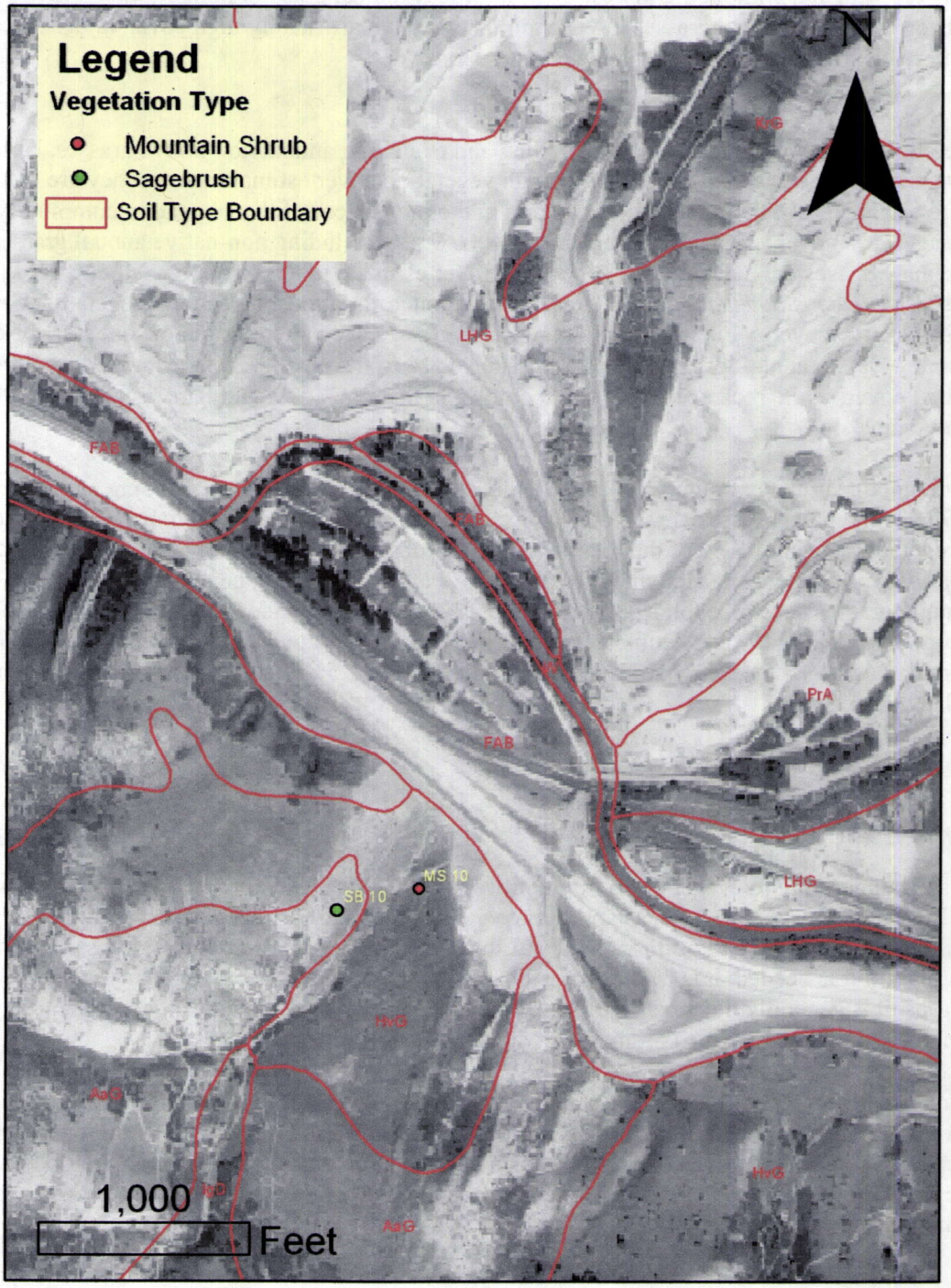


Figure 7. Vegetation transect locations on the south side of Highway 84



The results of the point intercept method for aerial cover for the ten transects in each vegetation type were then averaged and a standard deviation was determined. Vegetation species that were

encountered outside transect boundaries were also recorded. Vegetation cover was calculated both including the non-native annual grasses and excluding them. Relative covers were also calculated with and without the inclusion of the weedy annual grasses. In many cases, the inclusion of weedy annual grasses in vegetation cover give artificially high cover values since it is better able to establish than its native counterparts.

RESULTS

Vegetation cover was tabulated both including and excluding annual non-native grasses. Non-native annual grasses can give artificially high vegetation cover estimates, since they are better able to establish than their native counterparts in the interspaces of the vegetation community. The sagebrush cover type had a cover of 39.4% +/- 9.5% excluding non-native annual grasses. If the annual grasses are included, the vegetation cover estimate jumps to 50.5%. Mountain big sagebrush (*Artemisia tridentata* var *vaseyana*) accounted for almost half of the vegetation cover at 45% relative cover, while cool season perennial grasses accounted for almost one quarter of the cover at 24%. Perennial forbs accounted for almost 8% of the cover. Litter accounted for 35% of the total cover, while rock accounted for about 9% of the total cover and bare ground was minimal at 7%.

The mountain shrub community averaged 74.9% +/- 11.3% aerial cover excluding annual grasses and 79.2% if annual grasses are included. Big toothed maple (*Acer grandentitatum*) dominated the vegetation cover at 62% of the relative cover. Shrubs such as snowberry (*Symphorocarpos oreophilus*) and sagebrush accounted for about 28% of the vegetation cover. Aerial cover of perennial grasses and forbs totaled 4% of the relative cover. The understory vegetation (not accounted for in aerial cover estimates) varied from 15 to 50% cover. Litter averaged 15% +/- 8%, rock was 14 +/- 5%, and bare soil was a minimal 3 +/- 1.5%. See Tables 1 and 2 for complete tabulated results.

DISCUSSION

The soils underlying the vegetation communities at the Devil's Slide property are relatively well developed and thus would serve as appropriate growth medium for revegetation activities. It is very helpful to salvage and/or direct haul soil for revegetation purposes. If it is necessary to store the soil until it is needed, it is best to store the topsoil in a separate stock pile than the subsoils. The topsoil is generally the most fertile and contains native seed propagules that can naturally establish in reclaimed areas to ultimately reduce the cost of revegetation.

The ranges of the vegetation cover estimates for both the sagebrush and mountain shrub communities at the Devils' Slide mine property are typical for these native communities. In order to achieve 70% of the native cover to be considered reclamation success, the combination of direct hauling topsoil and the following seed mixes for each of the vegetation communities is recommended.

Table 3. Recommended seed mix for sagebrush community

Common Name	Scientific Name	Variety	PLS lbs	Seeds/ lb	Percent of mix
GRASSES					
Muttongrass	*Poa fendleriana*		0.5	890,000	13.3
Bluebuch wheatgrass	*Pseudoroegneria spicata var spicata*	P-7	4.5	170,000	18.8
Great Basin Wildrye	*Elymus cinereus*	Magnar	2	130,000	7.7
Bottlebrush squirreltail	*Elymus elymoides*		1.5	192000	8.6
Slender wheatgrass	*Elymus trachcaulus*	Pryor	4	159,000	21.3
FORBS					
Indian paintbrush	*Castilleja chromosa*		0.05	4,900,000	7.3
Yarrow	*Achillea lanulosa*		0.1	2,770,000	4.1
SHRUBS					
Sagebrush	*Artemisia tridentata var vaseyana*		0.25	2,500,000	18.6
TOTAL			12.8		

This seed mix averages to about 76 seeds per square foot.

Table 4. Recommended seed mix for Mountain Shrub Community

Common name	Scientific name	Variety	PLS lbs	# seeds/ lb	Percent of mix
GRASSES					
Canada bluegrass	*Poa compressa*		0.2	2,500,000	16.8
Bluebuch wheatgrass	*Pseudoroegneria spicata*	p-7	4	140,000	18.9
Great Basin Wildrye	*Elymus cinereus*	Magnar	2	130,000	8.8
Slender wheatgrass	*Elymus trachcaulus*	Pryor	5	159,000	26.8
FORBS					
Indian paintbrush	*Castilleja chromosa*		0.02	4,900,000	3.3
Sulfur flower	*Eriogonum umbellatum*		0.5	209000	3.5
Yarrow	*Achillea lanulosa*		0.05	2,770,000	4.7
Showy golden eye	*Heliomerus multiflora*		0.5	1055000	3.6
SHRUBS					
Snowberry	Symphoricarpos oreophilus		1	75,000	5.1
Sagebrush	*Artemisia tridentata var vaseyana*		0.25	2,500,000	8.4
TOTAL			13.9		

This seed mix averages to about 68 seeds per square foot.

REFERENCES

United States Department of Agriculture, Soil Conservation Service, 1980. Soil Survey of Morgan Area, Utah. Morgan County and Eastern Part of Weber County.

Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins, Eds. 1993. A Utah Flora. Brigham Young University, Utah.

Table 1. Tabulated Results of Vegetation Cover in the Sagebrush Vegetation Type

Common Name	Scientific Name	Avg	StDev	StErr	Low	High	Rel Cover	Rel Cover	Frequency
Cool season perennial grasses							(annual grasses included)	(annual grasses not included)	
Bluebunch wheatgrass	*Agropyron spicatum*	6.100	4.581	1.449	0.000	14.000	12.06	15.48	90.00
Basin wildrye	*Elymus cinereus*	<1							
Indian ricegrass	*Oryzopsis hymenoides*	<1							
Big bluegrass	*Poa ampla*	0.500	1.581	0.500	0.000	5.000	0.99	1.27	10.00
Sandberg's bluegrass	*Poa sandbergii*	2.700	3.368	1.065	0.000	10.000	5.34	6.85	70.00
Nelson's needlegrass	*Stipa columbiana*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Sub-total							**18.59**	**23.86**	
Introduced perennial grasses									
Kentucky bluegrass	*Poa pratensis*	0.300	0.675	0.213	0.000	2.000	0.59	0.76	20.00
Sub-total							**0.59**	**0.76**	
Annual grasses									
Japonese brome	*Bromus japonicus*	1.400	2.503	0.792	0.000	6.000	2.77		30.00
Cheatgrass	*Bromus tectorum*	6.800	10.053	3.179	0.000	27.000	13.44		60.00
Bulbous bluegrass	*Poa bulbosa*	2.900	9.171	2.900	0.000	29.000	5.73		10.00
Sub-total							**21.94**		
Perennial forbs									
Yarrow	*Achillea lanulosa*	0.800	2.201	0.696	0.000	7.000	1.58	2.03	20.00
Wild onion	*Allium cernuum*	0.400	0.699	0.221	0.000	2.000	0.79	1.02	30.00

Pacific aster	*Aster chilensis*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Sego lily	*Calochortus nuttallii*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Larkspur	*Delpinium sp*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Fleabane	*Erigeron spp*	0.300	0.675	0.213	0.000	2.000	0.59	0.76	20.00
Bedstraw	*Galium septentrionalis*	<1							
Stickseed	*Hackelia floribunda*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Lupine	*Lupinus sericeus*	0.200	0.422	0.133	0.000	1.000	0.40	0.51	20.00
Beardtongue	*Penstemon sp*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Dandelion	*Taraxacum officinale*	0.200	0.632	0.200	0.000	2.000	0.40	0.51	10.00
American sweet vetch	*Vicia americana*	0.700	1.059	0.335	0.000	3.000	1.38	1.78	40.00
Sub-total							**6.14**	**7.87**	
Annual and biennial forbs									
Musk thistle	*Carduus nutans*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Wright's bird beak	*Cordylanthus wrightii*	0.700	1.337	0.423	0.000	4.000	1.38	1.78	30.00
Jim Hill mustard	*Sisymbrium altissimum*	0.200	0.632	0.200	0.000	2.000	0.40	0.51	10.00
Pennycress	*Thlaspi arvense*	1.000	1.563	0.494	0.000	5.000	1.98	2.54	50.00
Salsify	*Tragopogon dubius*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Sub-total							**4.16**	**5.33**	
Sub-shrubs									
Louisiana sage	*Artemisia ludoviciana*	0.900	1.370	0.433	0.000	4.000	1.78	2.28	40.00
Oregon grape	*Mahonia repens*	0.600	0.966	0.306	0.000	2.000	1.19	1.52	30.00
Sub-total							**2.97**	**3.81**	
Shrubs									

Serviceberry	*Amelanchier alnifolia*	0.400	1.265	0.400	0.000	4.000	0.79	1.02	10.00
Utah serviceberry	*Amelanchier utahensis*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Mountain big sagebrush	*Artemisia tridentata var vaseyana*	18.000	9.989	3.159	0.000	36.000	35.57	45.69	90.00
Rubber rabbitbrush	*Chrysothamnus nauseosus*	3.600	5.082	1.607	0.000	12.000	7.11	9.14	40.00
Viscid rabbitbrush	*Chrysothamnus viscidiflorus*	0.600	1.265	0.400	0.000	4.000	1.19	1.52	30.00
Snowberry	*Symphorocarpos oreophilus*	0.300	0.949	0.300	0.000	3.000	0.59	0.76	10.00
Sub-total							**45.45**	**58.38**	
Cacti and succulents									
Prickly pear	*Opuntia polyacantha*	0.100	0.316	0.100	0.000	1.000	0.20	0.25	10.00
Sub-total							**0.20**	**0.25**	
Total Vegetation Cover with Annual grasses		50.500							
Total Vegetation Cover (without annual grasses)		39.400	9.524	3.012	26.000	56.000			100.00
Litter		35.000	7.008	2.216	23.000	46.000			100.00
Rock		9.375	8.651	3.059	2.000	28.000			100.00
Bare Soil		7.000	2.944	0.931	3.000	11.000			100.00
Total Ground Cover		93.000	2.944	0.931	89.000	97.000			100.00

Table 2. Tabulated Results of Vegetation Cover in the Mountain Shrub Vegetation Type

Common Name	Scientific Name	Avg	StDev	StErr	Low	High	RelCover (w/ annual grasses)	RelCover (without annual grasses)	Freq
Cool season perennial grasses									
Bluebunch wheatgrass	*Agropyron spicatum*	1.000	1.633	0.516	0.000	4.000	1.26	1.34	30.00
Slender wheatgrass	*Agropyron trachycaulum*	0.100	0.316	0.100	0.000	1.000	0.13	0.13	10.00
Sandberg's bluegrass	*Poa sandbergii*	0.100	0.316	0.100	0.000	1.000	0.13	0.13	10.00
Nelson's needlegrass	*Stipa columbiana*	0.100	0.316	0.100	0.000	1.000	0.13	0.13	10.00
Sub-total							**1.65**	**1.74**	
Introduced perennial grasses									
Kentucky bluegrass	*Poa pratensis*	1.200	2.394	0.757	0.000	7.000	1.52	1.60	30.00
Sub-total							**1.52**	**1.60**	
Annual grasses									
Japanese brome	*Bromus japonicus*	5.100	3.872	1.224	0.000	13.000	6.44		80.00
Cheatgrass	*Bromus tectorum*	0.900	2.846	0.900	0.000	9.000	1.14		10.00
Sub-total							**7.58**		
Perennial forbs									
Yarrow	*Achillea lanulosa*	0.800	1.033	0.327	0.000	3.000	1.01	1.07	50.00
Wild onion	*Allium cernuum*	0.100	0.316	0.100	0.000	1.000	0.13	0.13	10.00
Pacific aster	*Aster chilensis*	0.100	0.316	0.100	0.000	1.000	0.13	0.13	10.00
Indian painbrush	*Castilleja chromosa*	0.200	0.632	0.200	0.000	2.000	0.25	0.27	10.00
Dandelion	*Taraxacum officinale*	0.500	1.269	0.401	0.000	4.000	0.63	0.67	20.00
Sub-total							**2.15**	**2.27**	

Annual and biennial forbs									
Alyssum	*Alyssum alyssoides*	0.500	1.581	0.500	0.000	5.000	0.63	0.67	10.00
Musk thistle	*Carduus nutans*	0.400	0.699	0.221	0.000	2.000	0.51	0.53	30.00
Sub-total							**1.14**	**1.20**	
Sub-shrubs									
Louisiana sage	*Artemisia ludoviciana*	0.300	0.949	0.300	0.000	3.000	0.38	0.40	10.00
Oregon grape	*Mahonia repens*	0.200	0.422	0.133	0.000	1.000	0.25	0.27	20.00
Sub-total							**0.63**	**0.67**	
Shrubs									
Serviceberry	*Amelanchier alnifolia*	5.800	6.844	2.164	0.000	18.000	7.32	7.74	60.00
Mountain big sagebrush	*Artemisia tridentata var vaseyana*	12.600	8.276	2.617	0.000	26.000	15.91	16.82	80.00
Rubber rabbitbrush	*Chrysothamnus viscidiflorus*	2.200	6.268	1.982	0.000	20.000	2.78	2.94	30.00
Snowberry	*Symphorocarpos oreophilus*	0.300	0.675	0.213	0.000	2.000	0.38	0.40	20.00
Sub-total							**26.39**	**27.90**	
Cacti and succulents									
Prickly pear	*Opuntia polyacantha*	0.300	0.675	0.213	0.000	2.000	0.38	0.40	20.00
Sub-total							**0.38**	**0.40**	
Trees									
Big toothed maple	*Acer grandentitatum*	46.400	24.172	7.644	0.000	93.000	58.59	61.95	90.00
Sub-total							**58.59**	**61.95**	

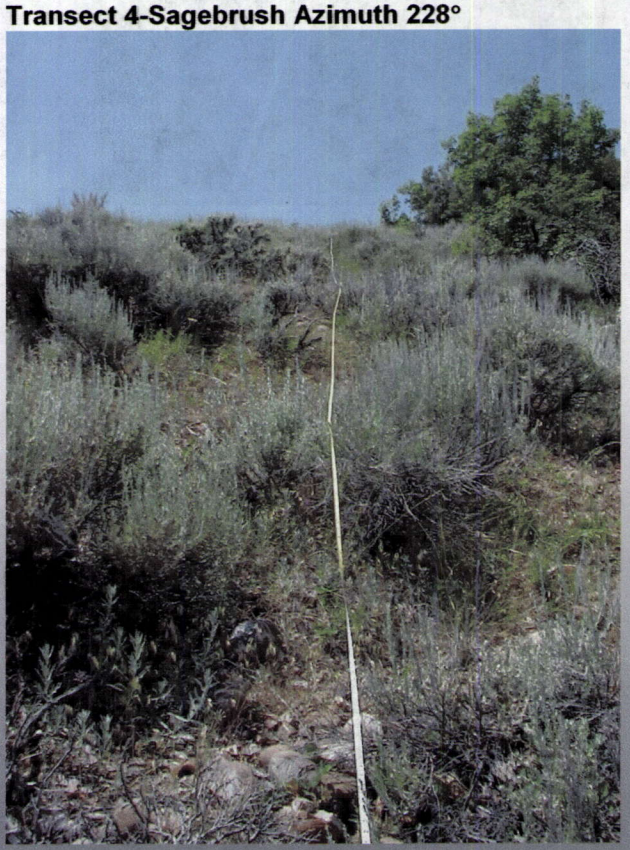
Total Vegetation Cover (with annual grasses included)		79.200							
Total Vegetation Cover (annual grasses not included)		74.900	11.348	3.588	60.000	94.000			100.00
Litter		14.889	8.085	2.695	1.000	27.000	0.00		100.00
Rock		13.750	4.717	2.358	7.000	18.000	0.00		100.00
Bare Soil		2.833	1.472	0.601	1.000	5.000	0.00		100.00
Total Ground Cover		98.300	1.829	0.578	95.000	100.000			100.00

APPENDIX A – PHOTOS OF SELECTED VEGETATION TRANSECTS

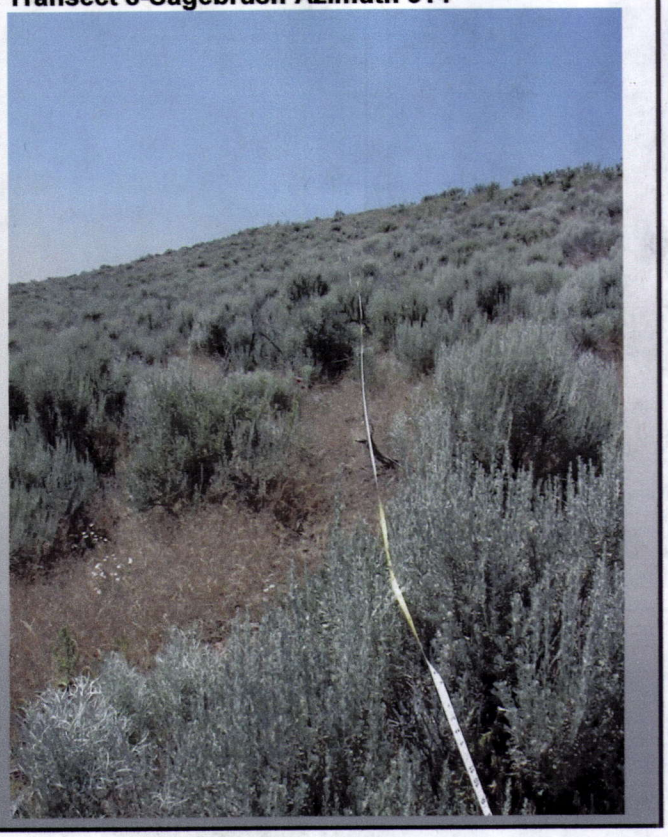
Transect 2- Sagebrush Azimuth 305°

Transect 6-Sagebrush Azimuth 122°

Transect 4-Sagebrush Azimuth 228°



Transect 8-Sagebrush Azimuth 314°



Transect 7-Sagebrush Azimuth 146°

Transect 10-Sagebrush Azimuth 34°

Mountain Shrub Community- Transect 4

Understory of Mountain Shrub Community

APPENDIX B- SOIL TEST RESULTS

Soil Test Report
and
Fertilizer Recommendation

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)
www.usual.usu.edu

Date Received: 7/18/2005
Date Completed: 8/1/2005

Name: MINDY WHEELER
Address: 4203 SUNRISE DR
PARK CITY UT 84098

Phone: 801-699-5459
County:

Lab Number: 5011618
Identification: 07-07-05 DEVILS SLIDE TRA 2
Crop to be Grown:

Grower's Comments: Soil type 4th

Acres in Field:

Soil Test Results			Interpretations	Recommendations
Texture		Sandy Loam		
pH		7.8	Normal	
Salinity - ECe	dS/m	0.5		
Phosphorus - P	mg/kg	36		
Potassium - K	mg/kg	325		
Nitrate-Nitrogen - N	mg/kg	2.64		
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%	3.6		
SAR		0.72	Soil Not Sodic	

Notes
CEC: 14.6
CONTACT THE LAB WITH WHAT YOU ARE GROWING FOR RECOMMENDATIOINS

For further assistance, please see your County Agent --

Soil Test Report and Fertilizer Recommendation

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)
www.usual.usu.edu

Date Received: 7/18/2005
Date Completed: 8/1/2005

Name: MINDY WHEELER
Address: 4203 SUNRISE DR
PARK CITY UT 84098
Phone: 801-699-5459
County:

Lab Number: 5011619
Identification: 07-07-05 DEVILS SLIDE TRA 7
Crop to be Grown:
Grower's Comments: on border b/w 9th + tee
Acres in Field:

Soil Test Results			Interpretations	Recommendations
Texture		Sandy Loam		
pH		7.8	Normal	
Salinity - ECe	dS/m	0.65		
Phosphorus - P	mg/kg	24		
Potassium - K	mg/kg	231		
Nitrate-Nitrogen - N	mg/kg	2.86		
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%	2.4		
SAR		0.65	Soil Not Sodic	

Notes
CEC: 11.8
CONTACT THE LAB WITH WHAT YOU ARE GROWING FOR RECOMMENDATIOINS

or further assistance please see your County Agent --

Soil Test Report
and
Fertilizer Recommendation

USU Analytical Labs
Utah State University
Logan, Utah 84322-4830
(435) 797-2217
(435) 797-2117 (FAX)
www.usual.usu.edu

Date Received: 7/18/2005
Date Completed: 8/1/2005

Name: MINDY WHEELER
Address: 4203 SUNRISE DR
PARK CITY UT 84098

Phone: 801-699-5459
County:

Lab Number: 5011620
Identification: 07-07-05 DEVILS SLIDE 145 2
Crop to be Grown:

Grower's Comments:

Acres in Field:

Soil Test Results			Interpretations	Recommendations
Texture		Sandy Loam		
pH		7.7	Normal	
Salinity - ECe	dS/m	0.5		
Phosphorus - P	mg/kg	27		
Potassium - K	mg/kg	197		
Nitrate-Nitrogen - N	mg/kg	2.73		
Zinc - Zn	mg/kg			
Iron - Fe	mg/kg			
Copper - Cu	mg/kg			
Manganese - Mn	mg/kg			
Sulfate-Sulfur - S	mg/kg			
Organic Matter	%	4.0		
SAR		0.50	Soil Not Sodic	

Notes
CEC: 15.3
CONTACT THE LAB WITH WHAT YOU ARE GROWING FOR RECOMMENDATIOINS

For further assistance, please see your County Agent --